Remarks

Reconsideration of this Application is respectfully requested.

Upon entry of the foregoing amendment, claims 1-22 are pending in the application, with claims 1, 2, 12 and 17 being the independent claims. Claims 1, 2, 12 and 17-22 have been amended. Descriptive support for the amendment is found in the specification as filed. The amendment is believed to introduce no new matter, and its entry is respectfully requested.

Claims 18-22 stand objected to for informalities. The drawings have been objected to under 37 C.F.R. § 1.83(a). Claims 1-16 and 18 stand rejected under 35 U.S.C. § 112, second paragraph as being indefinite. Claims 1-11 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent No. 6,307,877 to Phillips *et al.* (hereinafter "Phillips '877") in view of U.S. Patent No. 5,867,535 to Phillips *et al.* (hereinafter "Phillips '535") and U.S. Patent No. 5,528,199 to Dunlop *et al.* (hereinafter "Dunlop"). Claims 12-22 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Phillips '877 in view of Dunlop.

Applicants would like to thank the Examiner for the telephone interview on November 17, 2005 with the Applicants' representatives.

Based on the above amendment and the following Remarks, Applicants respectfully request that the Examiner reconsider all outstanding objections and rejections and they be withdrawn.

I.   The Objections to Claims 18-22 have been Overcome

Claims 18-22 stand objected to for informalities. Applicants thank the Examiner for noting the misnumbering and incorrect dependency of the claims. Accordingly, Applicants have amended the dependency of claims 18-22 to correspond to the renumbering of the claims. Therefore, Applicants respectfully request that the Examiner withdraw the objections to claims 18-22.

II.   No Correction to the Drawings is Required

The drawings have been objected to under 37 C.F.R. § 1.83(a) as failing to show each of the claimed features. Although Applicants believe that all aspects of the claimed invention are

shown in the drawings, Applicants have amended claims 1 and 12 to delete the redundant recitation "to calculate a frequency error produced by the mixer." Claims 2 and 17 have also been amended to delete the redundant recitation "to calculate a frequency error produced by the upconverter." The Examiner's arguments for objecting to the drawings are now moot. Therefore, Applicants respectfully request that the Examiner withdraw the objection to the drawings.

III.   The Claims are Definite

Claims 1-16 and 18 stand rejected under 35 U.S.C. § 112, second paragraph as being indefinite. For the following reasons, this rejection is respectfully traversed.

As discussed above, Applicants have amended claims 1, 2, 12 and 17 to delete redundant recitations. With respect to the Examiner's argument that "'the reception of radio frequency signals' lacks antecedent basis" in claim 12, the claim has been amended accordingly. For consistency, independent claims 1, 2 and 17 have also been amended.

By virtue of the amendments to independent claims 1, 2, 12 and 17, the rejection of dependent claims 3-11, 13-16 and 18 under 35 U.S.C. § 112, second paragraph has been rendered moot. Therefore, Applicants respectfully request that the Examiner withdraw the rejection of claims 1-16 and 18 under 35 U.S.C. § 112, second paragraph.

IV.   Claims 1-11 are Allowable Over Phillips '877 in view of Phillips '535 and Dunlop

Claims 1-11 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Phillips '877 in view of Phillips '535 and Dunlop. For the following reasons, this rejection is respectfully traversed.

Claim 1 recites "a computer adapted to receive [a] frequency measurement of [a] first oscillator from [a] first frequency monitor, to receive [a] frequency measurement of [a] second oscillator from [a] second frequency monitor, to calculate the errors of the first oscillator and the second oscillator, and to calculate a numerically controlled oscillator setting based on the calculation of the errors of the first oscillator and the second oscillator; wherein [a] numerically controlled oscillator is adapted to receive the numerically controlled oscillator setting from the

computer to cause [a] digital receiver to transmit a signal of a desired frequency to [a] digital demodulator." Claim 2 recites "a computer adapted to receive [a] frequency measurement of [a] first oscillator from [a] first frequency monitor, to receive [a] frequency measurement of [a] second oscillator from [a] second frequency monitor, to calculate the errors of the first oscillator and the second oscillator, and to calculate a numerically controlled oscillator setting based on the calculation of the errors of the first oscillator and the second oscillator; wherein [a] numerically controlled oscillator is adapted to receive the numerically controlled oscillator setting from the computer to cause [an] upconverter to transmit a signal of a desired frequency." Phillips '877, Dunlop and Phillips '535, taken alone or in combination, fail to disclose or even fairly suggest the present invention as recited in claims 1 and 2.

Phillips '877 discloses a modem which may be specifically programmed to improve performance (*see* col.1, ll.15-21). For example, the modem may be used with a broad range of devices such as satellite or WLAN transceivers by allowing for different methods of chip timing and different protocols for reading from a memory device (*see* col. 5, ll.34-43). Further, the modem may perform demodulation, deformatting, voice processing and phase-correction of a received signal (*see* col.5, ll.43-47).

While Applicants are unclear as to the Examiner's application of Phillips '877 to the present claims, Applicants agree with the Examiner's contention that Phillips '877 fails to disclose a frequency monitor (*see* Office Action ¶ 8), as recited in claims 1 and 2 of the present invention. Phillips '877 does disclose the use of two different numerically controlled oscillators 230, 232 (*see* FIG. 2) for driving a mixer in the transmitter subsystem and a mixer in the receiver subsystem, respectively, and the use of a reference clock 213 (*see* FIGS. 1, 2) to provide timing to the modem processing subsystems (*see* col.13, line 66 to col.14, line 2) but does not disclose monitoring the output of any of these devices.

Additionally, Applicants would like to point out that nowhere in the Phillips '877 disclosure are errors in any of the oscillators mentioned, let alone the correction of oscillator errors. The only error correction disclosed by Phillips '877 is a phase error correction performed by a digital signal processor 204 (*see* FIG. 1) during demodulation – this phase correction in no

way corrects for oscillator errors but merely adjusts the phase of a received signal so that it matches with the output signal for correlation purposes (*see* col.14, ll.8-14).

To cure the deficiencies in Phillips '877, the Examiner turns to Dunlop. Specifically, the Examiner argues:

> [I]t would have been obvious for one of ordinary skill in the art to have the circuit (frequency monitor) adapted to measure the frequency of the oscillator taught by Dunlop et al. in the Phillips et al.'s reference clock and frequency synthesizers to have a low-power-dissipation circuit for automatically establishing and maintaining the output frequency at a prescribed value (*see* Office Action, ¶ 8).

Dunlop discloses a closed loop circuit for monitoring the frequency of an oscillator (*see* col.1, ll.15-18 *and* col.5, ll.2-8). A correction circuit 34 continuously monitors the frequency output of an oscillator circuit 10 and provides <u>closed loop</u> feedback to correct for any errors in the frequency output (*see* col.5, lines 2-8). However, Dunlop fails to disclose a frequency monitor for monitoring a frequency of an oscillator, a computer adapted to calculate an error of the oscillator and a numerically controlled oscillator setting based on the error of the oscillator, and a numerically controlled oscillator adapted to receive the numerically controlled oscillator setting to cause the transmission of a desired frequency, as recited in claims 1 and 2 of the present invention.

The Examiner's argument that the combination of Phillips '877 with Dunlop and Phillips '535 anticipates claims 1 and 2 of the present invention is flawed for at least two reasons. First, the reference clock disclosed by Phillips '877 is not an oscillator. The reference clock merely provides timing signals and does not cause any other device to "oscillate." As such, monitoring the output of the Phillips '877 reference clock using the invention disclosed by Dunlop would not result in a working invention because Dunlop only discloses monitoring an oscillator and does not even suggest that the invention may be used to monitor a clock. Therefore, there would be no motivation to combine Phillips '877 with Dunlop.

Second, even if there were motivation to combine Dunlop to monitor the frequency output of the Phillips '877 reference clock or even any of the oscillators disclosed by Phillips '877, the combination would not result in the invention recited by claims 1 and 2 of the present

invention. As stated above, Dunlop discloses a closed loop circuit for monitoring and correcting the frequency output of an oscillator. On the other hand, claims 1 and 2 of the present invention recite monitoring the frequency output of first and second oscillators, calculating an error of the oscillators and a numerically controlled oscillator setting based on the oscillator errors and then setting a numerically controlled oscillator in response to the numerically controlled oscillator setting. In other words, the oscillators being measured are not receiving "feedback" based on their frequency output as is the oscillator in the system disclosed by Dunlop – a numerically controlled oscillator is being adjusted based on the frequency measurement of the first and second oscillators. Therefore, even if there were motivation to combine Dunlop with Phillips '877, the combination would not result in the invention recited by claims 1 and 2 of the present invention.

Finally, Phillips '535 also fails to cure the above-mentioned deficiencies of Phillips '877. While Phillips '535 may disclose tuning of a NCO and a local oscillator using a digital signal processor, Phillips '535 discloses that tuning is performed using information received via a computer and a field programmable gate array (*see* Abstract), and not from a frequency monitor, as recited by claims 1 and 2. Phillips '535 does not disclose or suggest the measurement of the frequency of any oscillator.

Because Phillips '877, Dunlop and Phillips '535, taken alone or in combination, fail to disclose or suggest the claimed apparatus including "a computer adapted to receive [a] frequency measurement of [a] first oscillator from [a] first frequency monitor, to receive [a] frequency measurement of [a] second oscillator from [a] second frequency monitor, to calculate the errors of the first oscillator and ̦the second oscillator, and to calculate a numerically controlled oscillator setting based on the calculation of the errors of the first oscillator and the second oscillator; wherein [a] numerically controlled oscillator is adapted to receive the numerically controlled oscillator setting from the computer to cause [a] digital receiver to transmit a signal of a desired frequency to [a] digital demodulator", claim 1 is allowable over Phillips '877 in view of Dunlop and Phillips '535. Claims 3-6 depend from claim 1 and are allowable for at least these reasons. Further, Because Phillips '877, Dunlop and Phillips '535, taken alone or in combination, fail to disclose or suggest the claimed apparatus including "a computer adapted to receive [a] frequency

measurement of [a] first oscillator from [a] first frequency monitor, to receive [a] frequency measurement of [a] second oscillator from [a] second frequency monitor, to calculate the errors of the first oscillator and the second oscillator, and to calculate a numerically controlled oscillator setting based on the calculation of the errors of the first oscillator and the second oscillator; wherein [a] numerically controlled oscillator is adapted to receive the numerically controlled oscillator setting from the computer to cause [an] upconverter to transmit a signal of a desired frequency," claim 2 is allowable over Phillips '877 in view of Dunlop and Phillips '535. Claims 7-11 depend from claim 2 and are allowable for at least these reasons. Therefore, Applicants respectfully request that the Examiner withdraw the rejection of claims 1-11 under 35 U.S.C. § 103(a).

V.   Claims 12-22 are Allowable Over Phillips '877 in view of Dunlop

Claims 12-22 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Phillips '877 in view of Dunlop. For the following reasons, this rejection is respectfully traversed.

Claim 12 recites "a computer adapted to receive [a] frequency measurement of [an] oscillator from [a] frequency monitor, to calculate an error associated with the oscillator, and to calculate a numerically controlled oscillator setting based on the calculation of the error associated with the oscillator; wherein [a] numerically controlled oscillator is adapted to receive the numerically controlled oscillator setting from the computer to cause [a] digital receiver to transmit a signal of a desired frequency to [a] digital demodulator." Claim 17 recites "a computer adapted to receive [a] frequency measurement of [an] oscillator from [a] frequency monitor, to calculate an error associated with the oscillator, and to calculate a numerically controlled oscillator setting based on the calculation of the error associated with the oscillator; wherein [a] numerically controlled oscillator is adapted to receive the numerically controlled oscillator setting from the computer to cause [an] upconverter to transmit a signal of a desired frequency to an antenna."

As discussed above, Phillips '877 and Dunlop, taken alone or in combination, fail to disclose or suggest the measurement of the frequency of an oscillator, the calculation of the oscillator error, the calculation of a numerically controlled oscillator setting based on the

oscillator error and a numerically controlled oscillator adapted to receive the numerically controlled oscillator setting. As such, claims 12 and 17 are allowable for at least the same reasons discussed above with respect to claims 1 and 2.

Because Phillips '877 and Dunlop, taken alone or in combination, fail to disclose or suggest the claimed apparatus including "a computer adapted to receive [a] frequency measurement of [an] oscillator from [a] frequency monitor, to calculate an error associated with the oscillator, and to calculate a numerically controlled oscillator setting based on the calculation of the error associated with the oscillator; wherein [a] numerically controlled oscillator is adapted to receive the numerically controlled oscillator setting from the computer to cause [a] digital receiver to transmit a signal of a desired frequency to [a] digital demodulator," claim 12 is allowable over Phillips '877 in view of Dunlop. Claims 13-16 depend from claim 12 and are allowable for at least these reasons. Further, because Phillips '877 and Dunlop, taken alone or in combination, fail to disclose or suggest the claimed apparatus including "a computer adapted to receive [a] frequency measurement of [an] oscillator from [a] frequency monitor, to calculate an error associated with the oscillator, and to calculate a numerically controlled oscillator setting based on the calculation of the error associated with the oscillator; wherein [a] numerically controlled oscillator is adapted to receive the numerically controlled oscillator setting from the computer to cause [an] upconverter to transmit a signal of a desired frequency to an antenna," claim 17 is allowable over Phillips '877 in view of Dunlop. Claims 18-22 depend from claim 17 and are allowable for at least these reasons. Therefore, Applicants respectfully request that the Examiner withdraw the rejection of claims 12-22 under 35 U.S.C. § 103(a).

Conclusion

All of the stated grounds of objection and rejection have been properly traversed, accommodated, or rendered moot. Applicants therefore respectfully request that the Examiner reconsider all presently outstanding objections and rejections and that they be withdrawn. Applicants believe that a full and complete response has been made to the outstanding Office Action and, as such, the present application is in condition for allowance. If the Examiner believes, for any reason, that personal communication will expedite prosecution of this application, the Examiner is invited to telephone the undersigned at the number provided.

Prompt and favorable consideration of this Amendment is respectfully requested.

Respectfully submitted,

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